What is claimed is:

1. A method for synthesizing 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine which comprises:

a) reacting the anionic form of a 2-chloro-6-substituted purine with a protected and activated 2-deoxy-2-fluoro-D-arabinofuranose;

b) reacting the product from a) with an alkoxide to provide 2-chloro-6-alkoxy purine nucleoside; and

c) reacting the 2-chloro-6-alkoxy purine nucleoside with ammonia to provide the 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine.

2. The method of Claim 1 wherein the 6-substituted group in the 2-chloro-6-substituted-purine is a halogen.

3. The method of Claim 1 wherein the 6-substituted group in the 2-chloro-6-substituted-purine is chlorine.

4. The method of Claim 1 wherein the anionic form is an alkali metal salt or organic amine salt.

5. The method of Claim 1 wherein the anionic form is an alkali metal salt.

6. The method of Claim 5, wherein the alkali metal is sodium.

7. The method of Claim 1 wherein the protecting group on the 3- and 5-hydroxyls of the 2-deoxy-2-fluoro-D-arabinofuranose is selected from the group consisting of an acyl group, ether group, and combinations thereof, and wherein the activating group at C-1 of the 2-deoxy-2-fluoro-D-arabinofuranose is selected from the group consisting of halo, alkylsulfonyloxy, and arylsulfonyl groups.

8. The method of Claim 1 wherein the 2-deoxy-2-fluoro-D-arabinofuranose is 2-deoxy-2-fluoro-3,5-di-*O*-benzoyl-α-D-arabinofuranosyl bromide.

9. The method of Claim 1 wherein the reaction of 2-chloro-6-substituted purine with the 2-deoxy-2-fluoro-D-arabinofuranose takes place in the presence of a dipolar, aprotic solvent.

10. The method of Claim 9 wherein the solvent is selected from the group consisting of acetone, acetonitrile, dimethylformamide, dimethyl sulfoxide, sulfolane, dimethylacetamide, and an ether.

11. The method of Claim 1 wherein the alkoxide is an alkaline metal alkoxide.

12. The method of Claim 11 wherein the alkoxide is methoxide.

13. The method of Claim 1 wherein the alkoxide is sodium methoxide.

14. The method of Claim 1 wherein the reaction of step (b) takes place in the presence of a solvent.

15. The method of Claim 14 wherein the solvent is an alcohol corresponding to the alkoxide of step (b).

16. The method of Claim 1 wherein step (c) takes place in the presence of a solvent.

17. The method of Claim 16 wherein the solvent is an alcohol.

18. The method of Claim 1 wherein the ammonia is present as an alcoholic solution.

19. The method of Claim 18 wherein the alcoholic solution is in methanol or ethanol.

20. A method for synthesizing 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine which comprises:

a) reacting the anionic form of a 2-chloro-6-substituted purine with a protected and activated 2-deoxy-2-fluoro-D-arabinofuranose; wherein the 6-substituted group in the 2-chloro-6-substituted purine is selected from the group consisting of amino, protected amino and alkoxy; and then (b) reacting with ammonia to provide the 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine.

21. The method of Claim 20 wherein the 6-substituted group in the 2-chloro-6-substituted purine is selected from the group consisting of amino and protected amino.

22. The method of Claim 20 wherein the 6-substituted group in the 2-chloro-6-substituted purine is amino.

23. The method of Claim 20 wherein the 6-substituted group in the 2-chloro-6-substituted purine is alkoxy.

24. The method of Claim 23 wherein the alkoxy is methoxy or ethoxy.

25. The method of Claim 20 wherein the anionic form is an alkali metal salt or organic amine salt.

26. The method of Claim 20 wherein the anionic form is an alkali metal salt.

27. The method of Claim 26, wherein the alkali metal is sodium.

28. The method of Claim 20 wherein the anionic form is an organic amine salt.

29. The method of Claim 28, wherein the organic amine salt is DBU.

30. The method of Claim 20 wherein the protecting group on the 3- and 5-hydroxyls of the 2-deoxy-2-fluoro-D-arabinofuranose is selected from the group consisting of an acyl group, ether group, and combinations thereof, and wherein the activating group at C-1 of the 2-deoxy-2-fluoro-D-arabinofuranose is selected from the group consisting of halo, alkylsulfonyloxy, and arylsulfonyl groups.

31. The method of Claim 20 wherein the 2-deoxy-2-fluoro- D-arabinofuranose is 2-deoxy-2-fluoro-3,5-di-*O*-benzoyl-β-D-arabinofuranose bromide.

32. The method of Claim 20 wherein the reaction of the 2-chloro-6-substitute purine with the 2-deoxy-2-fluoro-D- arabinofuranose takes place in the presence of a dipolar, aprotic solvent.

33. The method of Claim 32 wherein the solvent is selected from the group consisting of acetone, acetonitrile, dimethylformamide, dimethyl sulfoxide, sulfolane, dimethylacetamide, and an ether.

34. The method of Claim 20 wherein step (b) takes place in the presence of a solvent.

35. The method of Claim 34 wherein the solvent is an alcohol

36. The method of Claim 20 wherein the ammonia is present as an alcoholic solution.

37. The method of Claim 36 wherein the alcoholic solution is in methanol or ethanol.

38. A method for synthesizing 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine which comprises:

a) reacting the anionic form of a 2-chloro-6-substituted purine with a protected and activated 2-deoxy-2-fluoro-D-arabinofuranose; wherein the substituted group is amino or a protected amino; and then (b) reacting with a base to provide the 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine.

39. The method of claim 38 wherein the base is an alkali metal alkoxide.

40. A method for synthesizing 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine which comprises:

a) reacting the anionic form of 2-chloro-6-azido purine with a protected and activated 2-deoxy-2-fluoro-D-arabinofuranose; b) reacting with a reducing agent; and (c) reacting with a base to provide the 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-*9H*-purin-6-amine.

41. The method of claim 40 wherein the base is ammonia.

42. The method of claim 40 wherein the base is an alkali metal alkoxide.

43. A compound selected from the group consisting of 2-chloro-9-(2-deoxy-2-fluoro- β-D-arabinofuranosyl)-6-alkoxy-*9H*-purines and 2-chloro-6-substituted-9-(2-deoxy-2-fluoro-3,5-diprotected-β-D-arabinofuranosyl)-*9H*-purines wherein the 6-

substituent is selected from the group consisting of amino, protected amino groups, azido and alkoxy.

44. The compound of claim 43 wherein said alkoxy is methoxy or ethoxy.

45. The compound of claim 43 being a 2-chloro -9-(2-deoxy-2-fluoro-3,5-diprotected-β-D-arabinofuranosyl)-*9H*-purin-6-amine.

46. The compound of claim 43 being a 2-chloro-6-alkoxy-9-(2-deoxy-2-fluoro-3,5-diprotected-β-D-arabinofuranosyl)-*9H*-purine.

47. The compound of claim 43 being a 2-chloro-6-azido-9-(2-deoxy-2-fluoro-3,5-diprotected-β-D-arabinofuranosyl)-*9H*-purine.

48. The compound of claim 43 being a 2-chloro-6-protected amino-9-(2-deoxy-2-fluoro-3,5-diprotected-β-D-arabinofuranosyl)-*9H*-purine.